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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/936,184  | 09/10/2001  | Signe Unverricht     | 211820US0PCT        | 9394             |
| 22850   | 7590        | 06/17/2004           | EXAMINER            |                  |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.<br>1940 DUKE STREET<br>ALEXANDRIA, VA 22314 |             |                      | OH, TAYLOR V        |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |

1625

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/936,184 | <b>Applicant(s)</b><br>UNVERRICHT ET AL. |  |
|                              | <b>Examiner</b><br>Taylor Victor Oh  | <b>Art Unit</b><br>1625                  |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7,8,11-14,17-21 and 27-31 is/are rejected.
- 7) ☒ Claim(s) 4,6,9,10,15,16 and 22-26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/7/03 &amp; 5/13/04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

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The finality of the previous Office Action has been withdrawn. The application has been reopened due to new ground of rejection.

### The Status of Claims

Claims 1-31 are pending.

Claims 1-3, 5, 7-8, 11-14, 17-21, and 27-31 have been rejected.

Claims 4, 6, 9-10, 15-16, 22-26 have been objected.

### ***Claim Objections***

Claims 4, 6, 9-10, 15-16, 22-26 have been objected due to the rejected independent claim.

## **DETAILED ACTION**

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3, 5, 7-8, 11-14, 17-21, and 27-31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 and 7-8 of copending Application No. 10/806,460. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-4 of Application No. 10/806,460 does disclose the similar invention as shown in the claim 1 of the instant invention in the following:

A process for partially oxidizing acrolein to acrylic acid in the gas phase under heterogeneous catalysis by conducting a starting reaction gas mixture which comprises acrolein, molecular oxygen and at least one inert gas containing at least 20% by volume of molecular nitrogen and contains the molecular oxygen and the acrolein in a molar  $O_2:C_3H_4O$  ratio of  $\geq 0.5$  in one reaction stage over a fixed catalyst bed which is arranged in two spatially successive reaction zones A,B, the temperature of reaction zone A being a temperature in the range from 230 to 320°C and the temperature of reaction zone B likewise being a temperature in the range from 230 to 320°C, whose active composition is at least one multimetal oxide comprising the elements Mo and V, in such a way that reaction zone A extends to an acrolein conversion of from 45 to 85 mol% and, on single pass of the starting reaction gas mixture through the overall fixed catalyst bed, the acrolein conversion is  $\geq 90$  mol% and the selectivity of acrylic acid formation, based on acrolein converted, is  $\geq 90$  mol%, the chronological sequence in which the starting reaction gas mixture flows through the reaction zones corresponding to the alphabetic sequence of the reaction zones, wherein

- a) the hourly space velocity of the acrolein contained in the starting reaction gas mixture on the fixed catalyst bed is  $\leq 145$  l (STP) of acrolein/l of fixed catalyst bed-h and  $\geq 70$  l (STP) of acrolein/l of fixed catalyst bed-h,
- b) the volume-specific activity of the fixed catalyst bed is either constant or increases at least once in the flow direction of the reaction gas mixture over the fixed catalyst bed, and
- c) the difference  $T^{maxA} - T^{maxB}$ , formed from the highest temperature  $T^{maxA}$  which the reaction gas mixture has within the reaction zone A and the highest temperature  $T^{maxB}$  which the reaction gas mixture has within reaction zone B, is  $\geq 0^\circ C$ .

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2. A process as claimed in claim 1, wherein the difference  $T^{max} - T^{min}$  is  $\geq 20^{\circ}\text{C}$  and  $\leq 75^{\circ}\text{C}$ .
3. A process as claimed in claim 1, wherein the difference  $T^{max} - T^{min}$  is  $\geq 3^{\circ}\text{C}$  and  $\leq 60^{\circ}\text{C}$ .
4. A process as claimed in claim 1, wherein the difference  $T^{max} - T^{min}$  is  $\geq 5^{\circ}\text{C}$  and  $\leq 40^{\circ}\text{C}$ .

Furthermore, other dependent claims 7-8 are described below:

7. A process as claimed in any of claims 1 to 5, wherein the active composition of the fixed catalyst bed is at least one multimetal oxide active composition of the general formula IV



where the variables are defined as follows:

$\text{X}^1$  = W, Nb, Ta, Cr and/or Ce,  
 $\text{X}^2$  = Cu, Ni, Co, Fe, Mn and/or Zn,  
 $\text{X}^3$  = Sb and/or Bi,  
 $\text{X}^4$  = one or more alkali metals,  
 $\text{X}^5$  = one or more alkaline earth metals,  
 $\text{X}^6$  = Si, Al, Ti and/or Zr,

a = from 1 to 6,

b = from 0.2 to 4,

c = from 0.5 to 18,

d = from 0 to 40,

e = from 0 to 2,

f = from 0 to 4,

g = from 0 to 40, and

n = a number which is determined by the valency and frequency of the elements other than oxygen in IV.

8. A process as claimed in any of claims 1 to 7, wherein the volume-specific activity of the fixed catalyst bed increases at least once in the flow direction of the reaction gas mixture over the fixed catalyst bed.

However, the instant invention differs the prior art in that the instant claims have other reaction zones C and D ; the inert gas contains  $\text{CO}_2$  and or  $\text{CO}$ ; the propene content of the reaction gas is from 4 to 15 % by volume; the second reaction stages are carried out in two tube-bundle reactor; the active

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material of the second fixed-bed catalyst is at least one metal oxide of the formula VI of  $(D)_p(E)_q$ .

Even so, the specification does describe that the inert gas may contain  $CO_2$  and or  $/CO$  (see page 18 ,line 30 ), whereas the propene content of the reaction gas is from 4 to 15 % by volume(see page 18 ,lines 15-17 ) and the tube-bundle reactors can be employed in the reaction zones(see page 8 , line12) ; in addition, regarding one metal oxide of the formula VI of  $(D)_p(E)_q$  , the specification indicates the same formula (see from page 9 ,line 23 to page 10, line 26). Therefore, those limitations are relevant to the claimed invention.

With respect to other reaction zones C and D, the specification does indicate that such arrangements are possible when there is a need for the formation of acrylic acid with a high selectivity (see page 3 ,lines 12-15) . Therefore, it would have been obvious to the skilled artisan in the art to be motivated to add multiple reaction zones in order to increase the selectivity of forming acrylic acid.

Therefore, it would have been obvious to the skillful artisan in the art to have motivated to add those limitations to the claims in such a way to emphasize the certain steps in the process because they are not patentably distinct from each other with respect to the claims of themselves.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached from 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mckane can be reached on 571-272-0699. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*my 5th*  
*6/13/54*



**BA K. TRINH**  
**PRIMARY EXAMINER**  
**GROUP 1200**

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